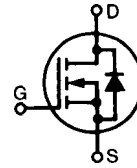


# HiPerRF™ Power MOSFETs F-Class: MegaHertz Switching

N-Channel Enhancement Mode  
Avalanche Rated, Low  $Q_g$ , Low Intrinsic  $R_g$   
High  $dV/dt$ , Low  $t_{rr}$

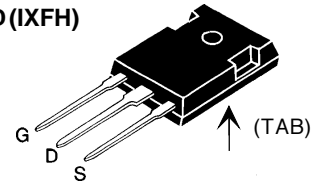
IXFH 28N50F  
IXFT 28N50F

$V_{DSS} = 500V$   
 $I_{D25} = 28A$   
 $R_{DS(on)} = 190m\Omega$   
 $t_{rr} \leq 250 ns$

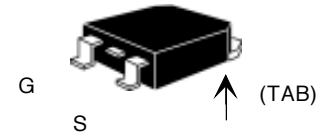


Symbol	Test Conditions	Maximum Ratings	
$V_{DSS}$	$T_J = 25^\circ C$ to $150^\circ C$	500	V
$V_{DGR}$	$T_J = 25^\circ C$ to $150^\circ C$ ; $R_{GS} = 1 M\Omega$	500	V
$V_{GS}$	Continuous	$\pm 20$	V
$V_{GSM}$	Transient	$\pm 30$	V
$I_{D25}$	$T_C = 25^\circ C$	28	A
$I_{DM}$	$T_C = 25^\circ C$ , pulse width limited by $T_{JM}$	112	A
$I_{AR}$	$T_C = 25^\circ C$	28	A
$E_{AR}$	$T_C = 25^\circ C$	35	mJ
$E_{AS}$	$T_C = 25^\circ C$	1.5	J
$dv/dt$	$I_S \leq I_{DM}$ , $di/dt \leq 100 A/\mu s$ , $V_{DD} \leq V_{DSS}$ $T_J \leq 150^\circ C$ , $R_G = 2 \Omega$	10	V/ns
$P_D$	$T_C = 25^\circ C$	315	W
$T_J$		-55 ... +150	$^\circ C$
$T_{JM}$		150	$^\circ C$
$T_{stg}$		-55 ... +150	$^\circ C$
$T_L$	1.6 mm (0.063 in.) from case for 10 s	300	$^\circ C$
$M_d$	Mounting torque	TO-247	1.13/10 Nm/lb.in.
Weight		TO-247	6 g
		TO-268	4 g

TO-247 AD (IXFH)



TO-268 (IXFT) Case Style



G = Gate, D = Drain,  
S = Source, TAB = Drain

## Features

- RF capable MOSFETs
- Double metal process for low gate resistance
- Unclamped Inductive Switching (UIS) rated
- Low package inductance - easy to drive and to protect
- Fast intrinsic rectifier

## Applications

- DC-DC converters
- Switched-mode and resonant-mode power supplies, >500kHz switching
- DC choppers
- 13.5 MHz industrial applications
- Pulse generation
- Laser drivers
- RF amplifiers

## Advantages

- Space savings
- High power density

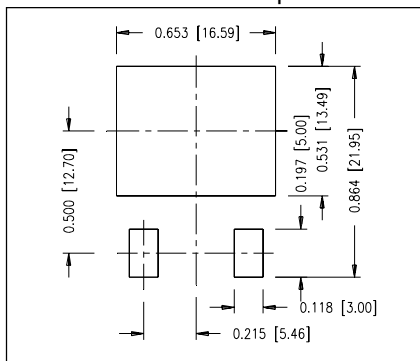
Symbol	Test Conditions	Characteristic Values ( $T_J = 25^\circ C$ , unless otherwise specified)		
		min.	typ.	max.
$V_{DSS}$	$V_{GS} = 0 V$ , $I_D = 1 mA$	500		V
$V_{GS(th)}$	$V_{DS} = V_{GS}$ , $I_D = 4 mA$	2.0		4.0 V
$I_{GSS}$	$V_{GS} = \pm 20 V$ , $V_{DS} = 0$			$\pm 100 nA$
$I_{DSS}$	$V_{DS} = V_{DSS}$ $V_{GS} = 0 V$ $T_J = 125^\circ C$			50 $\mu A$ 1.5 mA
$R_{DS(on)}$	$V_{GS} = 10 V$ , $I_D = 0.5 I_{D25}$ Note 1			190 m $\Omega$

Symbol	Test Conditions	Characteristic Values ( $T_J = 25^\circ\text{C}$ , unless otherwise specified)		
		min.	typ.	max.
$g_{fs}$	$V_{DS} = 10\text{ V}; I_D = 0.5\text{ I}_{D25}$ Note 1	12	18	S
$C_{iss}$	$V_{GS} = 0\text{ V}, V_{DS} = 25\text{ V}, f = 1\text{ MHz}$		3000	pF
$C_{oss}$			500	pF
$C_{rss}$			130	pF
$t_{d(on)}$	$V_{GS} = 10\text{ V}, V_{DS} = 0.5\text{ V}_{DSS}, I_D = 0.5\text{ I}_{D25}$ $R_G = 2.0\ \Omega$ (External)		15	ns
$t_r$			13	ns
$t_{d(off)}$			41	ns
$t_f$			8	ns
$Q_{g(on)}$	$V_{GS} = 10\text{ V}, V_{DS} = 0.5\text{ V}_{DSS}, I_D = 0.5\text{ I}_{D25}$		95	nC
$Q_{gs}$			20	nC
$Q_{gd}$			38	nC
$R_{thJC}$			0.39	K/W
$R_{thCK}$	(TO-247)		0.25	K/W

Source-Drain Diode		Characteristic Values ( $T_J = 25^\circ\text{C}$ , unless otherwise specified)		
Symbol	Test Conditions	min.	typ.	max.
$I_S$	$V_{GS} = 0\text{ V}$			28 A
$I_{SM}$	Repetitive; pulse width limited by $T_{JM}$			112 A
$V_{SD}$	$I_F = I_S, V_{GS} = 0\text{ V}$ , Note 1			1.5 V
$t_{rr}$	$I_F = I_S, -di/dt = 100\text{ A}/\mu\text{s}, V_R = 100\text{ V}$		1.0	250 ns
$Q_{RM}$				$\mu\text{C}$
$I_{RM}$				A

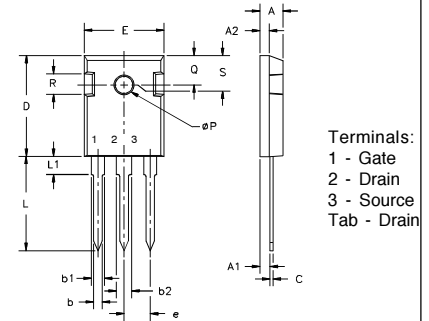
Note: 1. Pulse test,  $t \leq 300\ \mu\text{s}$ , duty cycle  $d \leq 2\%$

## Min Recommended Footprint



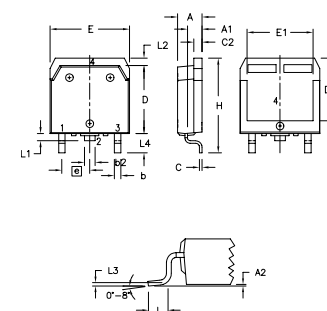
IXYS reserves the right to change limits, test conditions, and dimensions.

## TO-247 AD Outline



Dim.	Millimeter Min. Max.	Inches Min. Max.
A	4.7 5.3	.185 .209
A <sub>1</sub>	2.2 2.54	.087 .102
A <sub>2</sub>	2.2 2.6	.059 .098
b	1.0 1.4	.040 .055
b <sub>1</sub>	1.65 2.13	.065 .084
b <sub>2</sub>	2.87 3.12	.113 .123
C	.4 .8	.016 .031
D	20.80 21.46	.819 .845
E	15.75 16.26	.610 .640
e	5.20 5.72	0.205 0.225
L	19.81 20.32	.780 .800
L1	4.50	.177
ØP	3.55 3.65	.140 .144
Q	5.89 6.40	0.232 0.252
R	4.32 5.49	.170 .216
S	6.15 BSC	242 BSC

## TO-268 Outline



Dim.	Millimeter Min. Max.	Inches Min. Max.
A	4.9 5.1	.193 .201
A <sub>1</sub>	2.7 2.9	.106 .114
A <sub>2</sub>	.02 .25	.001 .010
b	1.15 1.45	.045 .057
b <sub>2</sub>	1.9 2.1	.075 .083
C	.4 .65	.016 .026
D	13.80 14.00	.543 .551
E	15.85 16.05	.624 .632
E <sub>1</sub>	13.3 13.6	.524 .535
e	5.45 BSC	.215 BSC
H	18.70 19.10	.736 .752
L	2.40 2.70	.094 .106
L1	1.20 1.40	.047 .055
L2	1.00 1.15	.039 .045
L3	0.25 BSC	.010 BSC
L4	3.80 4.10	.150 .161